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Vox Populi: Resource Partitioning, Organizational Proliferation, and the Cultural Impact of the Insurgent Microradio Movement¹

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Research on social movements has emphasized the origins of cultural movements, but has said little about how they impact popular culture through the creation of new organizations. The production of culture perspective asserts that market concentration in cultural industries inhibits diversity, but is silent about how social movements challenging corporate capitalism spur organizational birth. Organizational ecology describes how market concentration triggers anti-mass production movements, but has not examined whether the diversity of new organizations alters consumer behavior. The authors integrate these literatures to analyze how low-power FM (LPFM) radio stations arose in response to the domination of radio by corporate chains and investigate the impact of LPFM stations on radio listening. Implications for the study of social movements, organizational ecology, and the production of culture are outlined.

Sociologists have consistently lamented the disproportionate emphasis on the origins of social movements and the relative inattention given to their impact (Giugni 1998). The small but burgeoning literature on movement

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impact has focused on how collective action affects laws and policies (e.g., Clemens 1993; McAdam and Su 2002; Soule and Olzak 2004), but has yet to demonstrate movement “impacts on material culture (e.g. popular culture)” and “establish that challengers have an impact on cultural patterns that extend past the network of movement participants” (Amenta and Young 1999, pp. 34–35). Such research is needed to determine whether—and if so, how—social movements leave an imprint on popular culture.

Social movements seek to influence policy and culture through the creation of organizations; contending groups create protest organizations, and “such organizations serve as vehicles for expressing preferences of individuals and instigating change in larger systems” (Hannan 1988, p. 163). Despite growing recognition that changes in organizational density and diversity are essential to realize the political outcomes of movements (Minkoff 1997; Olzak and Uhrig 2001; Clemens and Minkoff 2004; Olzak and Ryo 2005; Staggenborg 2002), scant attention has been given to how the proliferation of insurgent organizations leads to changes in popular culture generally and consumer behavior in particular.

Although the production of culture perspective is concerned with how symbolic elements of popular culture are shaped by the systems by which they are created, distributed, evaluated, and sold to consumers (Peterson and Berger 1975, 1996), it has tended to take changes in law and industry structure as exogenous to the cultural industries under study (Hesmondhalgh 2002), and therefore has overlooked the significance of social movements as sources of endogenous change. For instance, studies of the music industry have shown that the concentration of market share resulted in homogeneity that was broken by innovative sounds produced by specialist organizations (Peterson and Berger 1975, 1996). Nevertheless, these studies have asked neither how the birth of small firms is linked to larger-scale resistance against the dominance of corporate chains, nor whether the proliferation of small specialist organizations represents a democratizing impulse that reshapes consumer behavior, thereby reducing market concentration (Peterson and Anand 2004).

Recent work in organizational ecology offers us a vantage point from which to understand how social movements arise within cultural industries and reshape popular culture. Resource partitioning theory argues that concentration by generalists frees up peripheral resources for specialists (Carroll 1985). Recent extensions suggest that anti-mass production movements arise in cultural industries because domination by large generalists producing homogenous products spurs the birth of specialists embodying an insurgent identity, who seek to democratize the production of popular culture (Carroll, Dobrev, and Swaminathan 2002). In the highly concentrated beer industry, insurgent microbrewers were able to critique

mass producers for making “industrial beer,” and to proliferate by exploiting their identity as the purveyors of specialty beers employing authentic techniques and small-scale production methods (Carroll and Swaminathan 2000). This research fits well with work by social movement theorists, which suggests that identity movements, informed by a “we-feeling,” seek to challenge dominant institutions and realize new collective identities by building new organizations that emphasize democracy, participation, and empowerment (Melucci 1985; Taylor and Whittier 1992). A number of studies show that resource partitioning creates opportunities and leads to density-dependent growth of specialist organizations (Dobrev, Kim, and Hannan 2001; Dobrev, Kim, and Carroll 2002; Boone, Carroll, and Witteloostuijn 2002), yet we know little about the complex interaction of resources and discourse that alerts potential organization builders to such opportunities and allows the creation of a new organizational form.

Thus, symmetrical gaps exist in the social movement, production of culture, and organizational ecology literatures. Research on social movements says little about whether and how social movements impact popular culture through the density and diversity of organizations. The production of culture perspective says that concentration of market share in cultural industries curtails diversity in popular culture, but has glossed over how the rise of small specialists is predicated on a larger contention between corporate capitalism and democracy, and is silent about the social dynamics underlying organization building. Resource partitioning theory shows how opportunity is created for anti-mass production movements to spawn specialists in cultural industries, but has yet to detail the process of entrepreneurial mobilization that is necessary for organizational proliferation.

These symmetrical gaps suggest that an integration of the social movement, production of culture, and organizational ecology literatures is sorely needed, and they supply the motivation for our study. Our argument is that four conditions lead to the creation of organizations to oppose mass production in cultural industries. First, industry concentration is an opportunity for an anti-mass production movement because it leads to both unfilled demand and a salient enemy against which to mobilize. Organizing effort does not immediately result from such opportunity, however; rather, it must be mobilized and channeled into organization-building efforts. Thus, second, mobilization occurs through discourse that presents the founding of small specialist organizations as a solution to the problem of homogenization created by concentration in cultural industries. Third, founding attempts are facilitated when a community infrastructure of voluntary organizations provides trained organization builders. Fourth, diversity in founding attempts is essential for founding success, but growth

in both the density and diversity of the new organizations determines their impact on consumer behavior.

We study the microradio movement, which arose in opposition against the domination of radio markets in the United States by corporate chains, and led to the rise of low-power FM (LPFM) stations in response. The microradio movement won access to the radio broadcast spectrum and sought to populate the airwaves with LPFM stations in order to foster local diversity and community voice as counterweights to commercial radio chains. We study the antecedents of applications to found LPFM stations to show that concentration of market share in the hands of radio chains freed up resources, and public discourse and the supply of trained organization builders from community-based nonprofit organizations led to organizational founding attempts. We then address whether the success of these founding attempts was contingent on their diversity by investigating the antecedents of application approvals by the Federal Communications Commission (FCC). Subsequently, we study the effect of the density and diversity of LPFM stations on listening to LPFM radio by consumers, and then examine whether the density and diversity of LPFM stations reduced the market shares of chain-owned radio stations in radio markets. We begin by describing how the microradio movement was an anti-mass production movement and discuss how microradio enthusiasts won the right to broadcast spectrum. Thereafter, we elaborate how the mobilization of entrepreneurial efforts was a prerequisite for influencing listener behavior.

MICRORADIO AS AN ANTI-MASS PRODUCTION MOVEMENT

The Radio Act of 1927 stated that airwaves were public property and that licenses were to be allocated on the basis of public interest. The more detailed Communications Act of 1934 limited station ownership to two per market (one AM and one FM) and so insured that many individuals were involved in decisions about programming on the airwaves. As television became the primary and more profitable broadcast medium in the 1950s, incumbent networks largely abandoned radio; at the same time, World War II veterans with radio experience lobbied for relaxed technical standards for local radio stations, which enabled small towns to begin local broadcasts (Sterling and Kittross 1978; Leblebici et al. 1991). Independent stations in small markets developed new radio formats featuring announcers playing records, rather than the original programming that had been the mainstay of network radio. Localism and diversity received a boost when the FCC created Class D radio stations in 1948, which were low-power radio services created to enable educational in-

stitutions to train students on a dedicated band of the FM dial. This service further contributed to public participation in licensed and sanctioned local radio broadcasting (Anderson 2004).

The Public Broadcasting Act of 1967 created the Corporation for Public Broadcasting (CPB), a private, nonprofit corporation. In 1972, the CPB lobbied the FCC to eliminate Class D stations and argued that the relatively poor quality and irregular scheduling of Class D stations represented an inefficient use of the radio spectrum, which would better serve the public interest through higher-power, higher-quality public broadcasting (Anderson 2004). The FCC eliminated Class D licenses in 1978 and required educational stations either to upgrade their power or to move to the commercial band of the FM spectrum (2002). Soon after the elimination of the Class D radio service, unlicensed broadcasters—otherwise known as “pirate radio”—began to appear on the FM dial. They were motivated by the desire to broadcast their own music, publicity for African-American businesses, and “militant talk” (Sakolsky 1992). Pirates aimed to create civil disobedience to force the FCC to change its policy, but failed because of FCC enforcement and opposition from the National Association of Broadcasters (NAB).

The Rise of Corporate Chains

By the mid-1980s, many FCC commissioners felt that the industry had matured (Lee 2004) and relaxed restrictions on ownership of radio stations; consequently, in 1985, one owner could control 12 AM and 12 FM radio stations nationwide. Through the 1980s, the NAB was concerned about the low profitability of radio stations and lobbied the FCC to further relax restrictions on ownership. The FCC acquiesced in 1992 and allowed owners to own two stations in a market (provided no station had more than 25% market share) and 20 stations in each band nationwide.

The Telecommunications Act of 1996 encouraged media consolidation by increasing the single-market ownership cap from two to eight stations and eliminating the national ownership cap completely. In the two years following the passage of the act, approximately 50% of the radio stations in the United States changed hands, most going from independent to corporate ownership (Smith and Rosenfeld 1999). In 2001, Clear Channel Communications alone owned 1,238 stations, or 11% of all stations, whereas Viacom/Infinity owned 184 stations, and Citadel Communications owned 206 stations. By the end of 2003, Clear Channel Communications could reach 200 million Americans, or more than 70% of the population, and had advertising revenue in excess of \$3.5 billion (Sharlet 2003). Minority radio station ownership dropped to 9% within two years

of deregulation (DeBarros 1998), even as market concentration doubled between 1995 and 2000 (Lee 2004).

Some have argued that concentration does not by itself lead to low diversity, particularly if large firms' decision-making processes are decentralized (Lopes 1992). Lee (2004) compared five sample cities between 1992 and 2002 and found only minor changes in the number of radio formats. Content diversity within each format declined considerably, however, as consolidation enabled chain-owning broadcasters to replicate formats nationwide, replace local radio personalities with syndicated programming, and eliminate local news departments entirely (Fisher 1998). Symptomatic of this homogenization is the fact that the number of songs entering the weekly top 10 declined from 114 in 1995 to 59 in 2000 (Lee 2004).

Winning Spectrum for LPFM Stations

It was against this background of chain consolidation that microradio activists argued that "airwaves are preserved for those whose sole motive is money" (Clarke 2004). Erstwhile pirates such as Dunipher or Pete triDish, media reform advocates such as the Media Access Project, Christian evangelists, and others came together to work against a common enemy—corporate chains—and toward the common goal of having local voices on the air through a low-power FM radio service. The result was the Micro-radio Empowerment Coalition, which was able to access allies such "the Green Party, the United States Catholic Conference, the Library Association of America, the ACLU, the Council of Calvin Christian Reformed Church, Native American tribes and the United Church of Christ; celebrities like the Indigo Girls, Bonnie Raitt and Kurt Vonnegut; and the cities of Detroit, Seattle, Ann Arbor, Mich., and Santa Monica, Berkeley and Richmond, Calif., among others" (Boehlert 2003). In interviews, Pete triDish, the leader of the Prometheus Radio Project, and Don Schellhardt, the drafter of the original LPFM enabling regulation, told us that although different wings of the microradio movement had different preferences regarding the details of an LPFM service, they recognized their common interests and common enemies sufficiently to identify themselves as a movement with a unified goal (triDish 2005; Schellhardt 2005). Over time, many began to think of themselves not only as microradio activists, but also situated their identity within the broader media reform movement. Even those with no history of activism got involved in FCC hearings and movement activities, and expressed their commitment to "doing whatever is necessary to keep microradio on the air" (Reese 2005), demonstrating a deep feeling of common cause.

Microradio also gained an ally in William Kennard, who became FCC

chairman in 1997. Concerned with increasing media consolidation following the Telecommunications Act of 1996, which he claimed was changing the radio industry “from one of independently owned operators to something akin to a chain store” (DeBarros 1998), Kennard viewed microradio as a legitimate balance to the corporate presence on and homogenization of the airwaves (Willis 2000; Boehlert 2003). It has also been suggested that Kennard, the FCC’s first African-American chairman, valued diversity and saw LPFM as a means to give minorities and underserved constituencies access to broadcasting (Mayer 1998).

In July 1997, radio enthusiasts Nickolaus and Judith Leggett and former Capitol Hill lobbyist Don Schellhardt filed a petition proposing that the FCC dedicate one channel on both the AM and FM bands nationwide for local microstations. Their goal was to foster community development and identification, develop local dialogue, and provide an outlet for experimentation and diversity, particularly in areas underserved by commercial, high-powered media (Leggett, Leggett, and Schellhardt 1997). Several months later, Rodger Skinner, a broadcast engineer who had applied several times for a full-power broadcast license without success, filed a similar petition. Skinner proposed licensing low-power stations to create a new class of radio entrepreneurs, address the growing demands of the microbroadcasting community, and provide more diverse and locally responsive programming (Skinner 1998). Skinner’s proposal also included engineering data demonstrating the feasibility of allowing more low-power broadcasters on the air without causing interference to existing stations.

The FCC made both proposals available for public comment in 1998 and received record numbers of comments from both proponents and opponents of microradio. Despite pressure from the NAB, which lobbied Congress heavily, the FCC issued a Notice of Proposed Rulemaking on January 28, 1999. This document, and the *Report and Order* issued in January 2000, adopted elements of both petitions while making concessions to the opponents of LPFM (FCC 1999, 2000). The FCC authorized an LPFM radio service in January 2000, despite a last-ditch lobbying effort by the NAB to undermine the service. The microradio movement thus succeeded in extracting the right to broadcast from the FCC and Congress (Hazlett 2001).

LPFM stations were the result of a broad identity movement, but were a tightly defined organizational form that had to conform to a regulatory code of conduct (Polos, Hannan, and Carroll 2002). They could broadcast for religious, community, or educational purposes without advertisements, and their operations were limited to an effective radiated power (ERP) of 100 watts (0.1 kilowatts) or less and maximum facilities of 100 watts ERP at 30 meters (100 feet) antenna height above average terrain (HAAT),

giving them a broadcast radius of approximately 3.5 miles (Federal Communications Commission 2000).

THE RISE AND CULTURAL IMPACT OF THE MICRORADIO MOVEMENT

The primary goal of microradio activists was to challenge the domination of radio by corporate chains by putting new voices onto the airwaves, to attract an audience for these new voices, and ultimately to reduce the influence of chain-owned radio stations. A crucial prerequisite was the mobilization of entrepreneurial interest, which meant eliciting applications from activists to found LPFM stations in individual communities. As challengers, microradio activists were in a weaker position than corporate chains, and so needed to amass resources; thus their situation was analogous to social movements.

Political opportunity structure models in social movement theory suggest that challengers can thrive when they have access to the institutional system, when the elite institutional structure is stable, when elite allies are present, and when there is institutional capacity and propensity for repressive action (McAdam, McCarthy, and Zald 1996; Kriesi et al. 1995; Rucht 1996; Tarrow 1994). Although these dimensions of political opportunity explain movements directed against state authorities, they do not generalize well to anti-mass production movements in cultural industries. Instead, anti-mass production movements depend on a salient enemy of concentrated mass producers, public discourse raising this concentration as a social problem requiring entrepreneurial problem solving, and community resources for creating anti-mass production organizations. Below we describe how these three dimensions of organizational opportunity produced LPFM applications. Thereafter, we discuss how the diversity of LPFM applicants influenced the start-up of LPFM stations and address the effects of LPFM density and diversity on listening by consumers, as well as on market shares of radio chains.

LPFM Entrepreneurial Attempts as Decentralized Responses to Chain Domination

Opportunity: chain concentration.—Resource partitioning theory argues that anti-mass production movements arise when a few large generalists dominate a market, thereby leading to underserved market segments that specialists may exploit, even in the absence of scale economies (Dobrev 2001; Carroll et al. 2002). Because generalist organizations offer homogeneous products with the broadest appeal, they can be attacked as in-

authentic and low-quality producers, whereas specialists can portray themselves as authentic, high-quality producers who embody local tastes, traditions, techniques, and voices (Carroll and Swaminathan 2000). Generalist organizations that control large swathes of a market constitute psychologically salient targets for activists and potential entrepreneurs alike. In turn, psychologically salient targets of negative attention enable activists to dramatize a system's inherent contradictions and vulnerabilities (Gamson and Meyer 1996; McAdam 1994) and to articulate an insurgent identity in opposition to the dominant identity (Bernstein 1997).

Most commercial broadcasters—especially those that own multiple stations—use the radio spectrum to broadcast material with broad appeal and noncontroversial content. Concentration of audience share in the hands of chains implied a transition from locally based programming to programming through nationally syndicated shows, satellite-programmed shows, and local marketing agreements. Consequently, in markets dominated by chain-owned stations, the economics of chain ownership, rather than the interests and issues of the community, dictated local programming. Concentration of market share by chains thus enabled activists to raise homogeneity within commercial radio as a cultural problem that LPFM radio could solve, and thereby to produce more applications to start LPFM stations. Therefore:

HYPOTHESIS 1.—More LPFM license applications will originate in communities with a high concentration of chain-owned radio stations than in communities with a relatively lower concentration of chain-owned radio stations.

Discourse.—Although “value patterns are partly sustained because the population at large believes in them” (Stinchcombe 1968, p. 112), the process by which discourse fosters expectations and inspires action has received little attention (Ferree 2003). Ruef (2000) argues that discourse creates carrying capacity for new organizational forms through two mechanisms. First, discourse about social problems focuses public attention and creates cognitive space for arguments about possible solutions, which might include the development of new organizational forms. Second, valenced discourse on the benefits of a particular solution justifies its use, as when a social movement argues that existing organizational forms are unsuitable for a particular social problem, and that a new form is needed. As Koopmans and Olzak (2004) propose, specialized gatekeepers, such as the media, select some messages, which can evoke strong reactions from the public, such that the messages resonate and become relevant and prominent, thus speeding the diffusion of a social movement. This is critical to a movement such as microradio, where no formal social movement organization existed to orchestrate and coordinate entrepreneurial efforts to increase the number of voices on the air.

LPFM enthusiasts were able to alter the perceptions of regulators and potential organization builders by engaging in a microradio and Internet-based information campaign, which stimulated individuals to argue for LPFM stations via public comments to the FCC. These public comments in favor of LPFM constituted valenced discourse which primed the opinions of potential organization builders. We argue that comment filings in support of LPFM represented the early stage of a local mobilization process, which later resulted in application filings by potential organization builders. Therefore:

HYPOTHESIS 2.—More LPFM license applications will originate in communities that have more comments in favor of LPFM broadcasting.

Organizational infrastructures.—Although concentration leads to underserved market segments and a salient enemy, and public discourse shapes expectations, trained organization builders are also required to start new organizations. Since “the mobilization potential of a group is largely determined by the degree of preexisting group organization” (Jenkins 1983, p. 538), social movements are more likely to have an impact when community-level organizational infrastructures are available to supply activists. New organizations arise in areas where formal groups already exist, and new organizational forms develop where organizational activity is already highly developed (Weber 1947; Zald and Ash 1966; McCarthy and Zald 1977; Stinchcombe 1965; Marrett 1980).

Social movement theory has incorporated this concept, arguing that institutional configurations, including personal networks, voluntary associations, work groups, and other existing organizations and institutions enable individuals to act collectively (McAdam 1988; McAdam, McCarthy, and Zald 1988; McCarthy et al. 1988; Gould 1991). These structures are required to be neither formal nor explicitly devoted to the social movement’s issue of interest, however; informal networks comprising friendship ties and affinity groups can serve the same purpose as the formal organizations and institutions in which the informal affiliations are often embedded (Buechler 1990). By adapting methods and goals to serve the needs of emergent causes and strategically framing issues in a way that bridges their connection to the formal institution, nonprofit organizations such as churches, unions, colleges, and professional associations serve as the building blocks of the social movement (McCarthy 1996). They also provide knowledge that helps the new movement develop organizationally and achieve its goals (Cress and Snow 1996). A denser organizational community is thus more fertile ground for founding new organizations because it provides human networks, loyalty, trust, organizing skills, and other assets necessary to found an organization (Marrett 1980). Therefore:

HYPOTHESIS 3.—More LPFM license applications will originate in

communities with a greater density of nonprofit organizations than in communities with relatively fewer nonprofit organizations.

Interactions.—Opportunity, discourse, and organizational infrastructures can be treated analytically as parallel influences on entrepreneurial mobilization, but it is also useful to consider how they interact. The baseline for such consideration should be a model of decreasing returns, in which a weakness on one dimension can be compensated for by strengths in another, but strengths on all dimensions cause a less-than-proportional effect as the mobilization approaches the limit possible in the community. Such a baseline would suggest that these processes combine less than additively, indicating a negative interaction, though one that is sufficiently weak that it causes only a deceleration in mobilization, rather than a downturn. Social processes bounded by resource availability follow this pattern, because resources determine outcomes more strongly when they are scarce.

Against this baseline, we suggest that the dynamics of mobilization are such that opportunity interacts positively with both discourse and organizational infrastructures, because the opportunity afforded by a salient enemy increases the effect of the other two processes. Psychologically salient targets of negative attention enable activists to dramatize a system's inherent contradictions and vulnerabilities (Gamson and Meyer 1996; McAdam 1994) and to articulate an insurgent identity in opposition to the dominant identity (Bernstein 1997). Such discourse has greater effect on its audiences in the presence of a grievance. Similarly, organizational infrastructures in the community are more likely to supply trained organization builders when a salient enemy exists. Both discourse and infrastructures work as levers on an existing problem and are ineffective when the problem is absent or trivial. Unlike the successful founding of an organization, a founding attempt is an outcome in which resource constraints have only weak effects, so a positive interaction will result from this lever effect. In the context of LPFM radio, this reasoning leads to the prediction of a positive interaction between market concentration and both supporting comments and organizational infrastructures, such that:

HYPOTHESIS 4.—A high concentration of chain-owned radio stations will reinforce the effect of comments in favor of LPFM on LPFM license applications.

HYPOTEHSIS 5.—A high concentration of chain-owned radio stations will reinforce the effect of high density of nonprofit organizations on LPFM license applications.

The Success of LPFM Entrepreneurial Attempts

Resource partitioning theory holds that concentration leads to formation of specialists who soak up peripheral resources and implies an increase in organizational diversity (Carroll 1985; Carroll et al. 2002). In our context, the success of entrepreneurial attempts hinges on their diversity for practical reasons, as well. Because the FCC authorized spectrum for LPFM stations with a view to enhancing local diversity, we would expect that the rate of acceptance of applications also depends on the diversity of the broadcasting goals pursued by the applicants. The greater the diversity of LPFM license applicants in a market—and thus the greater the diversity of domains such as arts, education, community identities, religion, and so on, that they represent—the more likely is the FCC to accept applications in that market. Low diversity of broadcasting content in the applicant pool causes competition among applicants and duplication of audiences, which lowers the rate of acceptances. Therefore:

HYPOTHESIS 6.—The rate of acceptance of LPFM applications in a market will increase with the diversity of applicants.

LPFM Station Audience Impact

Although organizational expansion is an indicator of movement strength (Minkoff 1997; Clemens and Minkoff 2004), a stronger test of a movement's impact would be its effect on culture beyond the movement's membership (Amenta and Young 1999). This proposition is straightforward, because organizations established by the movement will have an impact if they work as intended. However, the organizational form legitimized by a given social movement may be used to pursue other goals, either through cooptation after founding (Selznick 1949), or because rival groups also found new organizations of the same form. When the movement is primarily oriented toward greater diversity and community involvement, as in the case of LPFM radio, this concern is to some extent reduced because the stated goal of diversity is realized regardless of what form the diversity takes. More important, because the rules were written to exclude commercial broadcasters, they are unlikely to have caused goal displacement of LPFM stations. Studies of the civil rights movement suggest that the sheer number of organizations is vital for mobilization—thus, Oberschall (1973, p. 230) argued that the multiplicity of organizations allowed for multiple constituencies and strata to be mobilized, and McAdam (1999, p. 155) noted that the number of civil rights organizations increased the menu of options for potential members and benefactors. In our case, the greater the number of LPFM stations, the greater the range

of alternatives for community members, and therefore, the greater the listening to LPFM stations. Therefore:

HYPOTHESIS 7.—The greater the number (density) of LPFM stations in a market, the greater the listening to LPFM stations.

Organizational diversity also plays a crucial role in movement impact. Social movement researchers have argued that organizational diversity allows movements to appeal to different constituencies, mobilize different strata (Oberschall 1973, p. 230), and increase the number of alternatives for potential members and benefactors (McAdam 1999, p. 155). Olzak and Ryo (2005) also found that increasing diversity led to innovation and upsurge of protest activity in the civil rights movement. In parallel, organizational ecologists have contended that organizational diversity is a social good that creates a greater variety of solutions to problems faced by different constituencies (Hannan 1988). For example, organizational diversity within an industry increases worker mobility, suggesting that diversity facilitates matching between organizations and workers (Greve 1994; Fujiwara-Greve and Greve 2000). Taken together, these arguments imply that the diversity of content provided by LPFM stations operating in a community should increase listening to LPFM broadcasts in the local community. Therefore:

HYPOTHESIS 8.—The greater the diversity of LPFM stations in a market, the greater the listening to LPFM stations.

Impact of LPFM Stations on the Market Shares of Chains

A subtle issue is whether to evaluate the microradio movement's narrow goal of providing voices on the air to serve previously underserved segments or the broader goal of reducing the dominance of chains in radio markets. This issue strikes at the heart of the boundaries between generalists and specialists. In ecological terms, the issue is whether resource partitioning affects only the edge of the taste distribution previously ignored by the concentrated center, or whether it also reduces the realized niche of the dominant organizations (Carroll et al. 2002).

Two alternative scenarios are thus possible. In one scenario, the social movement creates organizations so distinctive that there is effective separation between them and the dominant population, and there are no competitive effects between them. This scenario is especially likely if the social movement introduces a new taste dimension into the market (Péli and Nooteboom 1999; Carroll and Swaminathan 2000), such as the distinction between local and general radio programming. In the other scenario, the social movement creates organizations that are different in degree only, some of which become so proximate to the dominant form that they compete with it directly. In such a scenario, a competitive cross-

effect from the movement organizations to the dominant form should be expected. Earlier work showed support for the separation scenario in the competition between mass brewers and microbrewers (Carroll and Swaminathan 2000). Competitive cross-effects are more likely, however, as the number of specialists and their diversity increases. Not only does competition among specialists for limited resources force some to move closer to the dominant form, but also diversity implies that they are distributed so that some of them naturally fall closer to the dominant form. To evaluate which of these two scenarios happened, we make the prediction from the second, competitive scenario. Failure to support these predictions would be evidence, albeit weak evidence, of the separation scenario.

HYPOTHESIS 9.—The greater the density of LPFM stations in a market, the lower the market share of chain-owned radio stations.

HYPOTHESIS 10.—The greater the diversity of LPFM stations in a market, the lower the market share of chain-owned radio stations.

DATA AND METHODS

Because we are interested in understanding the community-based processes at work in mobilization in the microradio movement, we conducted our study at the level of the community, for which we use the county as a proxy. We therefore collected data on all 3,141 counties in the United States as defined by the U.S. Census Bureau. Each county contributes one observation in the analysis of application counts, although we excluded one influential outlier, yielding a sample of 3,140 observations.

Dependent Variables

Our first dependent variable is the count of applications in each county, where each application is a request for permission from the FCC to construct a radio tower. We collected data on LPFM license applications from the FCC Media Bureau. The initial sample for this study included all applications for LPFM licenses filed with the FCC between the first filing window, which began on May 30, 2000, and the end of the available data, April 1, 2005, which yielded 3,286 applications. We excluded from our analysis any application filed by residents of U.S. territories, as well as those that were merely amendments to prior applications, leaving a final sample of 2,796 unique applications. We analyzed these applications with an event count model. The variance exceeds the mean in our data, so we use the negative binomial model, which includes a gamma-distributed term to account for such overdispersion. Negative binomial regression

can be a poor fit to data with a high proportion of zero scores, however, and zero-inflated models have been recommended as a better approach in such cases. These models allow researchers to discern whether different processes account for zeros and nonzeros in the dependent variable. Using a Vuong test, we found that the zero-inflated negative binomial model provided a better fit than the regular negative binomial model, and used the zinb estimation procedure of Stata 8.0. Because some of our counties are clustered within Arbitron markets, a possible violation of the assumption of independence among observations, we calculated the standard errors of coefficient estimates using a robust estimation procedure and clustering within market in this and all subsequent analyses (White 1982).

Our second dependent variable is acceptance of applications by the FCC. We obtained the dates of acceptance of LPFM applications from the FCC Media Bureau's LPFM reports, which are publicly available through the FCC website, and modeled the duration from the filing of the application to the acceptance in days. Applications that were not approved by the end of the data-collection period were treated as censored at that date, and applications that were withdrawn or denied were treated as censored on the date that this occurred. Because the processing time of applications by the FCC did not appear to fit a regular parametric hazard-rate model, we used a Cox proportional hazards model, which can accommodate irregular curves of time dependence, using the *stcox* procedure of Stata 8.0.

Our third dependent variable is listening to LPFM stations in a market. Although Arbitron does not track the listening to each LPFM station, it does collect all reported listening to LPFM stations in a given market as an aggregate category, which is exactly what we want to model. We acquired these data for the fall 2002 through 2004 rating cycles. The first of these was soon after the first LPFM stations started operating, and the three periods thus offer a (short) panel data set on the growth of LPFM influence in radio markets. Arbitron measures of radio listening are based on collecting diaries of one week's listening from individuals in the target markets. As our application analyses will show, the presence of LPFM stations in each market is in part determined by the same covariates that predict listening. To correct for the selectivity effect, we applied Lee's (1983) generalization of Heckman's (1979) two-stage estimator by estimating a selectivity model and using a selection variable derived from it as an instrument in the regression equation. Because the number of diary mentions is left-censored at zero, and the observations are clustered by market, we used interval regression, which is an extension of Tobit regression, using the *intreg* procedure of Stata 8.0. We analyze the data as pooled cross sections and lag all time-varying independent variables one

year. Only counties in Arbitron-rated markets enter this analysis, so it has fewer observations (376 counties for three years) than the founding analysis. We are thus unable to assess the effect of LPFM stations in smaller markets without audience measurement.

Our final dependent variable is the concentration of market share by chains. This variable is calculated the same way as when it was used as an independent variable, but is collected for later time periods in order to show the effect of LPFM radio rather than its cause. We obtained these data from BIAfn's Media Access Pro for the fall 2002 through 2004 ratings cycles. To separate the effect of the covariates on the selection of markets to have LPFM stations and the effect of LPFM stations in the markets, we estimated a treatment effect model where the treatment is an indicator for whether any LPFM stations are present in the market, using the *treatreg* procedure of Stata 8.0. We analyzed the data as pooled cross sections and lagged all time-varying independent variables by one year.

Independent Variables

Data on chain concentration in radio markets came from BIAfn's MEDIA Access Pro, a database containing information on over 13,000 radio stations in the United States, including station ownership and market shares in Arbitron-defined markets. Arbitron, Inc., is a private media and marketing research firm that estimates radio audiences for stations in markets covering 80% of the U.S. population. We collected data on the 282 U.S. radio ratings markets as defined by Arbitron and considered each county not included in an Arbitron market to be a separate market, yielding a total of 2,530 radio markets (282 Arbitron markets and 2,248 non-Arbitron counties).

For each Arbitron market, we computed a Herfindahl index of market share, a measure of market concentration. The index equals the sum of the squares of the market shares of chain-owned radio stations in a given market. For counties encompassing populations not covered by Arbitron-defined markets, we imputed values of the Herfindahl index by drawing from a uniform distribution with a mean and standard deviation equal to that of the 10 Arbitron markets with the fewest stations. This procedure is suitable because counties not covered by Arbitron are small radio markets, so comparison to small Arbitron markets improves the imputation (see Dobrev et al.[2001] for a similar approach). When used as an independent variable, the concentration is based on reports from spring 2000, before the first round of applications.

We operationalized discourse as the number of comments supporting LPFM within a particular county. Comments in favor of LPFM filed during the hearing period for the legislation proposed in 1998 were

counted for each county based on data from the FCC Media Bureau. The period for filing comments was from April 1998 to January 2000. Organizational infrastructure was defined as the number of nonprofit organizations for each county computed on the basis of data from the Internal Revenue Service Executive Order Publication 781, Cumulative List of Organizations, which includes all organizations exempt from federal taxation. For our analyses of acceptance of applications, we calculated applicant diversity as a Blau (1977) index of heterogeneity as follows:

$$H = 1 - \sum_{i=1}^c P_i^2,$$

where P_i is the proportion of group members in category i , and c is the number of possible categories. The measure ranges from zero, indicating no diversity, to a maximum of $(c - 1)/c$. LPFM applicant diversity was computed on the basis of the following four categories of stations: arts (arts and broadcast, music interest), education (education, community organization), government (government, safety, transportation, political), and religious and other (personal, foundation, other). When analyzing the impact of LPFM stations on listening and on the concentration of chains, we included an indicator variable for the existence of LPFM stations and the density of LPFM stations defined as the count of LPFM stations in the market. We computed founder diversity by calculating a Blau index of heterogeneity using only the stations whose applications had been accepted.

To measure the heterogeneity of audience resources for each community, we computed sociodemographic diversity measures on the basis of county-level demographic data taken from the U.S. Census Bureau's 2000 decennial census. We calculated Blau heterogeneity indexes for education, ethnicity, language, and urbanization for each county. Education diversity was computed using a five-way classification ranging from elementary school to four or more years of college. Language diversity was calculated using the five-way classification of the U.S. Census Bureau, with Spanish and French being the most frequent non-English categories. Urban diversity was computed using a four-way classification employed by the U.S. Census Bureau.

We also controlled for other community influences. The natural log of the population and per capita income were gathered from the U.S. Census Bureau's 2000 decennial census. Larger and more affluent counties were expected to have more LPFM activity. The number of radio stations in a given market was used as control using data gathered from BIAfn's MEDIA Access Pro. Like the concentration variable, density was measured annually between spring 2000 and spring 2004. Markets with high

radio density, and therefore greater diversity of offerings, were expected to have fewer LPFM applications. Because the count of stations per market was available only for Arbitron-defined markets, we imputed values of the total count for those counties not covered by Arbitron by drawing from a Poisson distribution with a mean equal to that of the 10 smallest Arbitron markets. We also include a dummy variable set to one if a county was not in an Arbitron-defined market. All the independent variables were measured temporally prior to the dependent variables. Tables 1, 2, and 3 present the descriptive statistics for the variables.

RESULTS

Table 4 presents the results of our models for LPFM application counts. Model 1 contains the control variables and the main-effect predictions. More populous counties produce more applications. Counties in markets with more licensed radio stations produce fewer applications; this result was expected, given the broader commercial offering in such markets. The number of applications increases with the degree of urban, linguistic, and educational diversity. The number of applications nationwide also significantly increases applications in the focal market. The model shows that the greater the concentration of chain-owned stations in a local radio market, the more LPFM applications are filed. This supports hypothesis 1 and implies that high chain concentration presents a strong, salient enemy, which spurs local activism and efforts to develop and express unique, local identities. Comments in support of the LPFM cause, however, do not increase the filing of applications; thus hypothesis 2 is not supported. As predicted by hypothesis 3, the more nonprofit organizations in a given county, the greater the number of applications filed from that county. This result highlights the important role of organizational resources in supporting new organizational activity. The more experience and expertise in nonprofit organization building, the more support there is for new endeavors directed toward noncommercial community causes.

Model 2 includes the interaction between concentration and the number of supportive comments. There is support for hypothesis 4, which proposed that comments in support of the LPFM cause would have a greater positive effect on applications in markets characterized by high concentration of ownership by chains. Model 3 includes an interaction between concentration and the number of nonprofit organizations. There is no support for hypothesis 5, which held that more applications were likely in areas where concentration was high and the supply of organizers was plentiful.

Model 4 is a robustness check. Because it is likely that comments outside

TABLE 1
DESCRIPTIVE STATISTICS AND CORRELATIONS FOR APPLICATION DATA

VARIABLE	MEAN	SD	CORRELATION COEFFICIENT																	
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	
1. Count of applications .....	.90	2.15	1.00																	
2. Not in Arbitron market .....	.72	.45	-.28	1.00																
3. Population (natural log)	10.22	1.41	.46	-.63	1.00															
4. Per capita income	17.51	3.94	.23	-.48	.50	1.00														
5. Licensed FM stations	5.78	7.51	.23	-.82	.57	.51	1.00													
6. Chain concentration .....	.05	.02	.00	-.05	-.01	-.01	1.00													
7. Urban diversity .....	.37	.18	-.05	.02	.08	-.07	-.08	.03	1.00											
8. Linguistic diversity .....	.17	.12	.25	-.19	.26	.18	.20	-.08	-.09	1.00										
9. Educational diversity .....	.82	.03	.22	-.20	.26	.06	.17	-.02	-.13	.45	1.00									
10. Organizational infrastructure	41.12	20.50	-.16	.36	-.58	-.16	-.31	.01	-.14	-.12	-.16	1.00								
11. Population (geoweighted, natural log)	656.95	375.52	.30	-.43	.64	.41	.48	-.06	-.20	.18	.10	-.29	1.00							
12. Count of applications (geoweighted)	19.58	14.21	-.04	.02	-.02	-.12	-.07	.00	.04	-.14	-.10	.07	.04	1.00						
13. Discourse (geoweighted)	62.22	37.13	.04	-.14	.17	.22	.16	-.01	-.04	-.10	-.05	-.02	.24	.04	1.00					
14. Discourse (within county)	1.24	6.66	.31	-.25	.38	.29	.30	-.06	-.20	.27	.17	-.05	.57	-.07	.31	1.00				
15. Chain concentration x voluntary associations	1.91	1.50	-.10	.19	-.36	-.14	-.20	.71	-.08	-.11	-.11	.63	-.21	.05	-.01	-.07	1.00			
16. Chain concentration x within-county discourse .....	.05	.24	.35	-.26	.39	.29	.30	-.01	-.20	.24	.18	-.05	.52	-.07	.32	.97	-.04	1.00		
17. Count of applications (nationwide)	988.89	571.87	-.01	.04	-.06	-.10	-.09	-.02	.03	.03	.02	.12	-.06	.90	-.04	-.05	.07	-.05	1.00	
18. Chain concentration x nationwide applications	45.54	38.73	.00	-.01	-.05	-.11	-.06	.63	.03	-.02	.00	.10	-.07	.63	-.03	-.06	.52	-.04	-.04	1.00

NOTE.—N = 3,140.

TABLE 2
DESCRIPTIVE STATISTICS AND CORRELATIONS FOR SUCCESS DATA

VARIABLE	MEAN	SD	CORRELATION COEFFICIENT																
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15		
1. Acceptance of applications .....	.08	.27	1.00																
2. Not in Arbitron market .....	.40	.49	.08	1.00															
3. Population (natural log)	11.79	1.44	-.12	-.69	1.00														
4. Per capita income	19.71	4.23	-.07	-.41	.49	1.00													
5. Urban diversity .....	.35	.19	.09	.39	-.52	-.36	1.00												
6. Linguistic diversity .....	.24	.14	-.07	-.26	.50	.13	-.29	1.00											
7. Educational diversity .....	.84	.03	-.07	-.32	.50	.06	-.28	.60	1.00										
8. Organizational infrastructure	33.04	13.82	.05	.38	-.51	-.11	.07	-.30	-.26	1.00									
9. Applicant diversity .....	.48	.44	-.15	-.10	.16	.17	-.18	.03	.04	-.05	1.00								
10. Licensed FM stations	11.38	10.96	-.09	-.69	.59	.39	-.38	.31	.30	-.29	.15	1.00							
11. Chain concentration	407.95	218.65	.02	.21	-.28	-.20	.14	-.30	-.18	.18	-.03	-.14	1.00						
12. Density of LPFM stations (within county) .....	.91	1.41	-.09	-.06	.18	.00	.02	.18	.16	-.08	-.14	-.01	-.04	1.00					
13. Count of applications (within county)	6.06	5.69	-.10	-.34	.62	.26	-.40	.41	.38	-.19	.05	.27	-.17	.49	1.00				
14. Discourse (within county)	7.05	21.98	-.06	-.24	.37	.26	-.27	.21	.17	-.03	.05	.30	-.14	.02	.30	1.00			
15. Count of applications (nationwide/ 100)	9.72	6.05	.05	.26	-.32	-.20	.21	-.21	-.22	.16	-.11	-.27	.09	.01	-.26	-.12	1.00		
16. Density of LPFM stations (nation- wide/100)	3.07	3.64	.05	-.05	.09	.05	-.06	.05	.06	-.04	.10	-.09	-.10	.08	.08	.04	-.01		

NOTE.—N = 12,157.

TABLE 3
DESCRIPTIVE STATISTICS AND CORRELATIONS FOR IMPACT DATA

VARIABLE	MEAN	SD	CORRELATION COEFFICIENT																	
			1	2	3	4	5	6	7	8	9	10								
1. Listening to LPFM stations (diary mentions) .....	.001	.01	1.00																	
2. Listening to LPFM stations (quarter hours) .....	.001	.01	.84	1.00																
3. Chain concentration	407.95	218.65	-.02	-.02	1.00															
4. Population (natural log)	11.79	1.44	-.05	-.04	-.28	1.00														
5. Per capita income	19.71	4.23	-.02	-.02	-.20	.49	1.00													
6. Urban diversity .....	.35	.19	.02	.02	.14	-.52	-.36	1.00												
7. Linguistic diversity .....	.24	.14	.00	-.01	-.30	.50	.13	-.29	1.00											
8. Educational diversity .....	.84	.03	-.03	-.03	-.18	.50	.06	-.28	.60	1.00										
9. Organizational infrastructure	33.04	13.82	.07	.03	.18	-.51	-.11	.07	-.30	-.26	1.00									
10. Density of LPFM stations	1.30	1.72	.05	.07	-.02	.11	-.02	.07	.14	.11	-.04	1.00								
11. Diversity of LPFM stations .....	.05	.16	.17	.17	-.03	.04	.01	.07	.06	.03	-.02	-.39	1.00							

NOTE.—N = 4,920.

TABLE 4
 LPFM ENTREPRENEURIAL ATTEMPTS: COUNT OF LPFM LICENSE APPLICATIONS
 PER COUNTY (Zero-Inflated Negative Binomial Models)

VARIABLE	LOCAL AND NATIONAL INFLUENCE			SPATIAL INFLUENCE
	Model 1	Model 2	Model 3	Model 4
Not in Arbitron market .....	.016 (.134)	.035 (.132)	.032 (.132)	.175 (.130)
Population (natural log) .....	.845** (.058)	.833** (.059)	.830** (.059)	1.013** (.076)
Per capita income .....	.013 (.010)	.013 (.010)	.013 (.010)	.008 (.010)
Licensed FM radio stations ...	-.029** (.008)	-.029** (.008)	-.029** (.008)	-.021** (.008)
Urban diversity .....	.721** (.256)	.776** (.257)	.783** (.258)	.537* (.266)
Linguistic diversity	1.332** (.359)	1.550** (.343)	1.546** (.344)	1.458** (.333)
Educational diversity	4.591** (1.167)	4.362** (1.164)	4.360** (1.164)	3.208** (1.239)
Count of applications (nation- wide) .....	.00021** (.00007)	.00020** (.00006)	.00020** (.00006)	.00019** (.00006)
Chain concentration	3.467* (1.362)	2.043 (1.373)	-.745 (3.460)	-7.159 (4.812)
Organizational infrastruc- ture .....	.018** (.003)	.017** (.003)	.013** (.005)	.016** (.005)
Discourse (within county)	-.006 (.005)	-.062** (.011)	-.063** (.011)	
Chain concentration × within- county discourse		1.588** (.311)	1.617** (.314)	
Chain concentration × organi- zational infrastructure .....			.074 (.085)	.043 (.087)
Population (natural log, geo- weighted)				-.0006** (.0002)
Discourse (geoweighted)				-.006* (.003)
Chain concentration × geoweighted discourse .....				.142** (.050)
Constant	-14.667** (1.258)	-14.343** (1.266)	-14.173** (1.281)	-14.502** (1.288)
Log pseudo likelihood	-3,242.26	-3,230.4	-3,230.05	-3,206.09
Wald test χ^2	446.4	517.1	524.73	635.72
<i>df</i>	11	12	13	14

NOTE.—*N* = 3,140 observations. Robust SEs are in parentheses.

* *P* < .05.

** *P* < .01.

a particular community influenced potential founders in a focal community and that the impact of the comment would vary by distance from the focal community, we also constructed geoweighted counts of prior comments in favor of LPFM stations throughout the United States.² We get the same results as those observed in model 3: there is a positive main effect of local organizations and a positive interaction effect of geoweighted comments and local chain concentration.

Table 5 presents findings obtained from Cox proportional hazards models of acceptances of applications by the FCC. In model 5, we include a number of controls and the applicant diversity as predictors of the acceptance rate. The effect of population and per capita income turn negative and significant, thereby implying that the FCC was more prone to accept publications in sparsely populated and low-income areas. The effect of urban diversity is positive and significant, but linguistic diversity becomes insignificant, and educational diversity is now negative and significant. These results suggest that the FCC tended to approve applications in mixed urban and rural areas with low educational diversity first before moving on to other areas. Among the control variables, the number of LPFM stations in operation in the market reduces acceptances, but the number of applications in the market is insignificant. According to this model, the diversity of applicants actually decreases the rate of acceptance, indicating a lack of support for hypothesis 6.

In model 6, we test whether the effect of applicant diversity is curvilinear and find partial support for hypothesis 6. The first-order effect is positive, and the second-order effect is negative, thereby indicating that initial increases in diversity facilitate acceptance, but subsequent increases in diversity decrease acceptance. Most likely, the FCC rejected more applications when the diversity of applicants was high because of mutually exclusive applications filed by organizations that had not coordinated their application efforts. We used the joint distribution of the first- and second-order term of diversity to compute a 95% confidence interval for the inflection point (Weesie 2001) and found the confidence interval to be enclosed by the observed range of diversity. Thus we are confident that the inflection point occurs within the range of values taken by the diversity in our data.

² The geoweighting is done by assigning each comment a weight equal to the inverse of the distance between the centers of the focal county and the county in which it occurred, as in earlier work on spatial influences (Hedström 1994; Sorenson and Audia 2000). For two counties i and j of given latitude (lat) and longitude (long), the formula for calculating the distance (d_{ij}) in miles is

$$d_{ij} = 3,437 \arccos[\sin(\text{lat}_i)\sin(\text{lat}_j) + \cos(\text{lat}_i)\cos(\text{lat}_j)\cos(|\text{long}_i - \text{long}_j|)].$$

We assign a distance of one to comments in the same county.

TABLE 5
SUCCESS OF LPFM ENTREPRENEURIAL ATTEMPTS: RATE OF ACCEPTANCE OF LPFM
LICENSE APPLICATIONS (Cox Models)

Variable	Model 5	Model 6
Not in Arbitron market	-.076 (.176)	.241* (.131)
Population (natural log)	-.230*** (.042)	-.232*** (.044)
Per capita income	-.028*** (.010)	-.032*** (.011)
Urban diversity	1.000*** (.313)	.169 (.276)
Linguistic diversity	-.086 (.271)	-.254 (.353)
Educational diversity	-3.246** (1.308)	-3.827*** (1.043)
Organizational infrastructure .....	.002 (.004)	-.002 (.005)
Licensed FM radio stations .....	.000 (.013)	.021*** (.007)
Chain concentration in radio markets	-.00017* (.00010)	-.00018* (.00011)
No. of prior successes (market)	-.858*** (.120)	-1.249*** (.106)
Count of applications (within county) .....	.026 (.018)	-.027 (.018)
Discourse (within county)	-.009 (.005)	-.005* (.003)
Applicant diversity	-2.131*** (.114)	8.946*** (.508)
Applicant diversity squared		-13.753*** (.729)
Count of applications ^a .....		.112*** (.038)
Count of applications squared ^a		-.006** (.002)
Density of LPFM stations ^a .....		.398*** (.060)
Density of LPFM stations squared ^a		-.034*** (.004)
Log pseudo likelihood	-7,660.28	-7,104.78
Wald test χ^2	698.65	1,589.94
<i>df</i>	13	18

NOTE.—*N* = 12,157. Robust SEs are in parentheses.

^a Nationwide/100.

* *P* < .10.

** *P* < .05.

*** *P* < .01.

We include first- and second-order terms of the number of nationwide applications and nationwide LPFM stations to test whether density-dependent legitimation and competition processes govern the founding rates (Hannan and Freeman 1987). The density dependence model holds that increases in the density of an organizational form legitimate the organizational form in the eyes of other potential entrepreneurs, resource providers such as volunteers and donors, and regulators, paving the way for organizational founding. Beyond a point, however, subsequent increases in density lead to overcrowding, foster competition, and lead to a decline in the founding rate; this results in an inverted U-shaped relationship between density and the founding rate (Carroll and Hannan 2000). When competition for resources takes place in local markets, however, an alternative hypothesis is that nationwide density only has a legitimating effect, leading to a positive density dependence effect only (Hannan et al. 1995). Surprisingly, we find an inverted U-shaped effect of density even though radio markets are local. Most likely this is a result of the centralized decision making by the FCC, which may have caused stricter evaluation of applications once the national density was high enough to fulfill the policy goal of a more diverse radio industry. National application diversity showed the same inverted U-shape, supporting the interpretation that decision making in the FCC accounts for the competition effect. Again, the confidence intervals of the inflection points are fully inside the observed range of the variables.

Table 6 presents the results of our analyses with mentions of listening to LPFM in Arbitron-collected diaries as the dependent variable. In model 7, we include population, income, number of nonprofit organizations, linguistic and education diversity, and a selection variable for the presence of LPFM stations as controls. Of these control variables, only the number of nonprofit organizations has significant and negative effects. The number of LPFM stations significantly increases listening, thereby supporting hypothesis 7. Model 8 replaces the density of LPFM stations with the diversity, and the significant and positive coefficient provides support for hypothesis 8. These two covariates are significantly correlated (.39), however, and when they are entered together only the density is statistically significant. Model 9 enters both and also has second-order terms in order to examine whether they have inverted U-shaped effects. The estimates show that density has an inverted U-shaped effect on the audience, and the 95% confidence interval of the inflection point falls inside the observed range of the variable. LPFM audiences thus initially increase in density, but then decrease. Hence our hypothesis (hypothesis 7) that density increases listening needs to be qualified.³

³ A potential objection to our analyses of LPFM mentions is that they do not measure

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TABLE 6
LPFM STATION AUDIENCE IMPACT (Interval Regression Models)

VARIABLE	DIARY MENTIONS		
	Model 7	Model 8	Model 9
Population (natural log)	-.012** (.006)	-.009 (.006)	-.009 (.006)
Per capita income	-.002 (.001)	-.002* (.001)	-.001 (.001)
Urban diversity	-.025 (.018)	-.012 (.020)	-.021 (.018)
Linguistic diversity	-.066 (.048)	-.054 (.046)	-.063 (.047)
Educational diversity	-.134 (.146)	-.151 (.143)	-.113 (.139)
Organizational infrastructure	-.0008** (.0004)	-.0008** (.0004)	-.0006** (.0003)
Selectivity instrument	-.004 (.007)	-.007 (.006)	.007 (.008)
Density of LPFM stations .....	.009*** (.003)		.018*** (.006)
Density of LPFM stations squared			-.002** (.001)
Diversity of LPFM stations .....		.064*** (.019)	.051 (.082)
Diversity of LPFM stations squared			-.033 (.145)
Constant .....	.273* (.152)	.253* (.140)	.190 (.143)
Log pseudo likelihood	-53.09	-58.60	-13.51
Wald test χ^2	20.73	17.05	30.86
df	8	8	11

NOTE.— $N = 4,920$. Robust SEs are in parentheses.
 * $P < .10$.
 ** $P < .05$.
 *** $P < .01$.

Table 7 presents results from the analysis of chain market share concentration. Model 10 finds that the density of LPFM stations is insignificant, and so there is no support for hypothesis 9. Model 11 shows that founder diversity also has insignificant effects, and so there is no support

for how long people listened to LPFM stations. We therefore replicated model 8 using the quarter hours of LPFM listening as the dependent variable, finding that our results held also with that measure. We also tested the findings of model 9 by entering density and diversity one at a time and found the same results as in the full model. These models are available from the authors.

TABLE 7
 IMPACT OF LPFM STATIONS ON MARKET SHARE OF CHAINS
 (Treatment Regression Models)

Variables	Model 10	Model 11	Model 12
Chain concentration in radio markets (lagged) .....	.886*** (.014)	.886*** (.014)	.882*** (.013)
Year	1.834 (2.480)	1.299 (2.412)	1.556 (2.425)
Number of stations (lagged)	-.333 (.222)	-.344 (.223)	-.345 (.012)
Urban diversity	3.417 (8.459)	3.795 (8.619)	-.128 (8.035)
Linguistic diversity	-32.516** (15.950)	-32.033** (15.980)	-37.801** (15.153)
Educational diversity	-156.758* (87.284)	-154.639* (86.386)	-146.269* (85.267)
Density of LPFM stations .....	.186 (1.122)	-.477 (1.110)	2.095 (2.976)
Density of LPFM stations squared			-.385 (.351)
Diversity of LPFM stations		14.563 (12.301)	251.077*** (62.205)
Diversity of LPFM stations squared			-464.209*** (117.314)
Treatment instrument	-8.483 (9.746)	-10.248 (9.768)	-12.954 (9.989)
Constant	173.293** (70.248)	173.483** (69.602)	168.626** (68.481)
Log pseudo likelihood	-29,407.83	-29,403.61	-29,361.55
Wald test χ^2	7,152.11	7,191.43	7,498.52
df	8	9	11

NOTE.— $N = 4,920$. Robust SEs are in parentheses.

* $P < .10$.

** $P < .05$.

*** $P < .01$.

for hypothesis 10. As in table 6, the final model 12 enters second-order terms for both variables and shows that founder diversity has an inverted U-shaped effect. Initial increases in LPFM founder diversity increase chain concentration, but subsequent increases in founder diversity lower it. Again, the confidence interval shows that the inflection point occurs within the observed range of the variable.

DISCUSSION

This article was motivated by symmetrical gaps in the literature. Social movement researchers have devoted little attention to the cultural effects of social movements, and in particular, to how social movements affect popular culture through the diversity and density of social movement organizations. The production of culture perspective treats concentration of market shares in cultural industries as the source of bland homogenization in popular culture, but says little about how specialist organizations arise as part of a larger social challenge to corporate capitalism. Although organizational ecologists have shown that anti-mass production movements arise when markets are concentrated, they have yet to detail how entrepreneurial mobilization increases organizational density and diversity, or to document the effects of both density and diversity on consumers. These gaps spurred our study of the microradio movement. The findings from our study extend the ongoing dialogue between social movement theory and organizational ecology (Minkoff 1997, 2004; Soule and Olzak 2004; Olzak and Ryo 2005), and connect them with the production of culture perspective. We discuss these in turn.

Contributions to Production of Culture

In a recent review, Peterson and Anand (2004, p. 328) characterize studies showing how laws and industry structure are not exogenous givens, but endogenous outcomes, as a major research opportunity in the production of culture perspective. They also argue that the relationship between the number of firms and diversity is related to the struggle between market capitalism and oligopolistic capitalism, and between capitalism and the democratic state.

Our study takes a step in that direction by showing how the right to broadcast was not a given but was won by microradio activists, and how industry structure was also not a given but the outcome of collective mobilization. Moreover, our study detailed how an anti-mass production movement arose in a cultural industry as a response to the concentration of ownership in the hands of chains, and therefore embodied a larger contest between capitalism and democracy. In doing so, our study directs attention to how organizational proliferation via resource partitioning is essential for social movements to impact popular culture.

Contributions to Organizational Ecology

Our study sheds light on the micromechanisms by which resource partitioning leads to the expansion of organizational density and diversity.

Extant research seldom distinguishes between an organizing attempt and a successful founding (Aldrich 1999; Carroll and Hannan 2000), but our study enabled us to distinguish between an application for a construction permit to start an LPFM station and an acceptance of the application of the FCC. We found that concentration of market shares in the hands of chains in radio markets freed up peripheral resources for specialists, facilitated mobilization, and increased applications. However, valenced community discourse was also decisive—comments in favor of LPFM stations interacted with market concentration to increase the flow of applications. Thus, when chains were influential in a market and so constituted a salient psychological enemy, comments in favor of LPFM had greater positive effect on potential organization builders. So one implication is that both material carrying capacity and cultural carrying capacity matter for new organizations—concentration may free up resources, but protest organizations seeking to critique mass production arise only when discourse primes potential organization builders.

Our study also enlarges the reach of resource partitioning theory by explicitly considering the distribution of community resources. Some scholars have suggested that resource partitioning models have taken the distribution of resources as a given with the result that “concerns of niche width, position, and crowding often take precedence over broader factors, including population structure” (Carroll et al. 2002, p. 235). Theoretical treatments have suggested that more dimensions allow for finer-grained niches (Péli 1997), but empirical work has only recently begun to address the role of resources and has focused on diversity of audience tastes (Boone et al. 2002). It matters for the predictions from resource partitioning theory how large and resource rich the “edge” of a resource distribution is, because the edge is what smaller specialists are left to feed on after the generalists divvy up the center. The prediction is thus that a larger edge can produce more founding attempts and fewer failures, but the challenge remains to specify the types of resources involved. Our study considers how the diversity of a community leads to diversity of audience tastes and increases the demand for specialists. Our findings show that diversity in sociodemographic resources (language, education, and urbanization) influences audience sizes, and thus applications and successful foundings. Moreover, the results showed that nonprofit organizational infrastructures in the community provided trained organization builders and increased founding attempts. So an implication is that it is not only the “demand” for specialists that matters, but also that the supply of trained organization builders is consequential in increasing the number of founding attempts.

We found that the success of these founding attempts hinged on diversity, which gives substance to the ecological prediction that specialists proliferate in concentrated markets. Our analyses showed an inverted U-

shaped relationship between the diversity of causes pursued by applicants and the acceptance rate by the FCC; initial increases in the diversity of applicants enhanced the application rate, but after a point, subsequent increases in diversity lowered the acceptance rate. Thus, one implication is that resource partitioning triggers organizational proliferation via diversity—initial increases in diversity enhance the exploration of peripheral resources, but subsequent increases in diversity may trigger competition among diverse ideological causes, impose constraints on regulators, and lower founding rates. An interesting issue for future research is to discern if a similarly curvilinear relationship between diversity of founders and successful foundings can be found in unregulated markets.

Furthermore, we found that the density-dependent processes of legitimation and competition govern the success of applications and their acceptance by the FCC. Even after controlling for the number of LPFM stations and applications in a market, we found that the number of nationwide applications and LPFM stations had an inverted U-shaped relationship with the acceptance rate. An added implication of our study is that the density-dependent process of legitimation and competition in foundings also holds for potential organization builders: as the number of founding attempts increases, the legitimacy of the form increases, and entrepreneurial attempts are successful. Beyond a certain point, however, further increases in density of organization builders trigger competition and lower the acceptance rate. We also obtained the usual finding of an inverted U-shaped relationship between population density (the number of LPFM stations in operation) and the acceptance rate.

Contributions to Social Movement Theory

Our analyses of the effects of organizational density and diversity not only redress a gap in organizational ecology, but also further social movement theory. Our study responds to a call by Staggenborg (2002) and Clemens and Minkoff (2004) to delineate how mobilization via organizations decisively shapes the impact of social movements.

A clear finding is that that the diversity of LPFM stations significantly increases listening to LPFM as measured by both diary mentions and quarter hours. This result lends substance to arguments that organizational diversity enables social movements to reach out to different audiences (Oberschall 1973; McAdam 1999). Moreover, the positive effects of LPFM diversity on listening also help us impose scope conditions on other research which indicates that organizational heterogeneity inhibits movements and activism. Thus, Ingram and Rao (2004) found that heterogeneity of independent store owners impaired their ability to band together and enact anti-chain store laws, and Carroll, Xu, and Kocak

(2005) showed that density rather than diversity of newspapers affected electoral turnout. Why should organizational diversity increase listening in audiences when it impairs collective action? One reason is that “diversity is a social good valued in its own right” by consumers in the case of “organizations whose outputs are largely symbolic or cultural” (Hannan and Freeman 1989, p. 9). A second reason is that just as the diversity of organizations enables matching between careers and individuals (Hannan 1988), similarly, the diversity of organizations also promotes matching between organizations and customers.

We had expected organizational density to increase the listening of audiences, but subsequent analyses revealed that density has an inverted U-shaped effect on audience listening. Although against our expectations, these results fit with research on decision making by consumers, which indicates that too much choice can be demotivating. Iyengar and Lepper (2000) found that consumers were more satisfied with their choices when they had fewer choices, but lost interest in the category when inundated with too many choices. In their experiment, they found that people were more inclined to purchase exotic jams or gourmet chocolates when presented with six choices than an array of 24 or 30 choices. This implies that excessive proliferation may dampen the interest of audiences and lower the impact of social movements.

Our analyses showed that the density of LPFM stations had no effect on the concentration of market shares by chain-owned radio stations. This finding fits well with the logic of resource partitioning—namely, that concentration frees up peripheral resources, such that there is little overlap between generalists and specialists. An interesting implication of resource partitioning is that there may be decoupling between framing and impact such that concentration becomes the target of rhetoric—activists blame domination, and by so doing, mobilize organization building, but the new organizations cater to completely different audiences. However, the decoupling between framing and mobilization needs be carefully interpreted because of the critical role of organizational diversity.

We found that initial increases in LPFM founder diversity increased chain concentration, but subsequent increases in founder diversity lowered it. This is an interesting finding that may be caused by the effect of LPFM stations on nonchain commercial stations in the market. Commercial stations not owned by chains are generally found away from the center of the distribution, and are thus likely to be hurt by LPFM entry before the chains themselves. Most likely this weakening of nonchain radio stations accounts for the initial increase in chain concentration when LPFM station diversity increases, but when LPFM station diversity is high the chain stations suffer as well.

Our results suggest that the diversity of protest organizations, rather

than the density, is critical for social movements seeking to affect popular culture through organizational proliferation. Organizational diversity increases listening, but very high density dampens listening. Organizational diversity initially increases chain concentration by siphoning resources from independent commercial stations, but after a point, it reduces chain concentration. By contrast, density has no appreciable impact on concentration by chain-owned radio stations.

Our study also suggests directions for future research. Is the decentralized mobilization based on community characteristics observed here a general feature of social movements seeking to establish formal organizations, or are there also more centralized modes of dispersion? Is diversity more important than density for movements dedicated to cultural outcomes other than popular culture? Is diversity more crucial for political movements? Our study pertained to a grassroots movement which was local and decentralized in character and required little collective action for microradio stations after they won the right to broadcast. Is diversity a double-edged sword that impedes collective action, but enhances outreach to audiences? Research into these and related questions is necessary if we are to build a theory of social movements in our society of organizations.

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